

**Climate Change Data and Detection Program
Climate Data Set Development and Analysis
Information Sheet FY 2010**

Background

Activities focus on ensuring that high-quality climate data sets are available for evaluating the significance of climate variability and change, a fundamental cornerstone to our understanding and, ultimately, prediction of climate. In developing data sets, however, there are a variety of uncertainties that impede analyses unless directly addressed during the developmental phase. Examples of areas of uncertainty that CCDD explicitly addresses in the research mode include: changes in station location and in the environment around an observation site; changes in instruments and algorithms; instrument malfunctions, instrument calibrations, and time-varying biases; inadequate spatial resolution, data set length, or temporal resolution; changes in temporal and spatial sampling, and aliased temporal sampling; and data assimilation and model reanalysis biases. During FY 2010, CCDD is emphasizing the need to address these issues of data set homogeneity, continuity, and bias identification and adjustment. This attention to the scientific integrity of a data set lessens the risk of erroneous results being published in national and international assessments.

The CCDD focus is on data sets of primary importance to climate change and, especially, those aspects of the climate that have the potential for severe impacts on human and natural systems (e.g., tropical storm climatology over the various ocean basins; extratropical storms; sea surface and sub-surface temperature and salinity; ocean heat content; sea level; air temperature; precipitation; winds; clouds; atmospheric water vapor; snow and ice distributions; ocean waves) that would benefit from additional data assembly (the incorporation/merging of data derived from multiple sensors/platforms), development of innovative quality control procedures to insure data homogeneity, and data bias identification/adjustment work. The purpose of this program is not to perform the initial (zero-order) quality control of raw data coming from a new instrument or recent field campaign, but to generate best estimates of a climate variable over time. The emphasis is on data compilations that have the potential to become enduring data sets relevant to long-term monitoring and climate change studies because of their length, continuity, and consistency. As new (or newly discovered) data become available, analysis techniques improve, instruments and measurement practices change, or data set deficiencies are identified, it is important to re-visit and reprocess, as appropriate, existing data sets.

Guidance on selecting high priority climate variables can be found in the GCOS Second Adequacy Report (2003), which defines a set of Essential Climate Variables, and, also, in the 2008 report on “Future Climate Change Research and Observations: GCOS, WCRP and IGBP Learning from the IPCC Fourth Assessment Report” (WMO/TD No. 1418), which identifies current gaps and shortcomings in observations, data sets, and research, as well as several relevant Climate Change Science Program (CCSP) Synthesis and Assessment Products (SAPs), e.g., SAP 1.1, SAP 1.3, and SAP 3.3

(<http://www.climate-science.gov/Library/sap/sap-summary.php>).

FY 2010 Priorities

Proposals are particularly encouraged for data sets that: (1) are long-term and continuous (recognizing that the duration of some key records is limited and that gaps in records can be challenging); (2) support the study of extreme weather and climate events (e.g., tropical and extratropical storms, heavy downpours, floods, droughts, heat waves, tornadoes, lightning, wildfires) that can have large impacts on society – both natural and built systems; and (3) include the analysis of the data sets produced to understand whether and to what extent the character of the climate is variable or changing; an example is changes/trends in various climatologies that may occur in a non-stationary climate and the implications for future changes. The temporal and spatial resolution must be sufficient to differentiate the regional signal from background noise.

Emerging applications for which data set compilations are increasingly relevant include: (1) phenomena that affect coastal inundation and erosion – sea level, storm surge, waves, etc; (2) atmospheric data (e.g., wind, clouds, solar insolation) that support renewable energy approaches such as wind and solar power and inform decisions on new mitigation technologies to reduce greenhouse gas emissions.

Investigators are encouraged to utilize results from Phase 5 of the Coupled Model Intercomparison Project (CMIP5) to delineate the varying or changing character of fundamental and derived climate parameters, both historical and projected.

Proposers are encouraged to include a proposal component that reflects any plans to scientifically exercise the data sets to elucidate patterns of climate variability and change. This activity ultimately leads to a more robust data set and provides essential insights on how components of the climate system are variable or fundamentally changing.

Additional Information

Proposals will be considered for up to three years in duration, but one and two-year proposals are encouraged. Funds for each subsequent year of multi-year proposals will be subject to a review of annual progress reports.

Proposals are required to address the long-term preservation of the data set, i.e., have a plan to transfer responsibility for the archiving of the data set to a recognized national center in a format and with sufficient metadata to ensure a useful and accessible resource. Contact with a data center should be initiated as part of the proposal preparation process.

Contact Information

Chris Miller
Program Manager
Climate Change Data and Detection

Bill Murray
Program Manager
Climate Change Data and Detection

Program
NOAA Climate Program Office
1315 East-West Highway
Silver Spring, MD 20910
Phone: 301-734-1241
christopher.d.miller@noaa.gov

Program
NOAA Climate Program Office
1315 East-West Highway
Silver Spring, MD 20910
301-734-1243
william.l.murray@noaa.gov